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NEW YORK STATE DEPT OF ENVIRONMENTAL CONSERVATION ALBANY F/G 13/13
NATIONAL DAM SAFETY PROGRAM. CITY OF UTICA RESERVOIR 2 (INVENTO--ETC(U)
SEP 80 J B STETSON

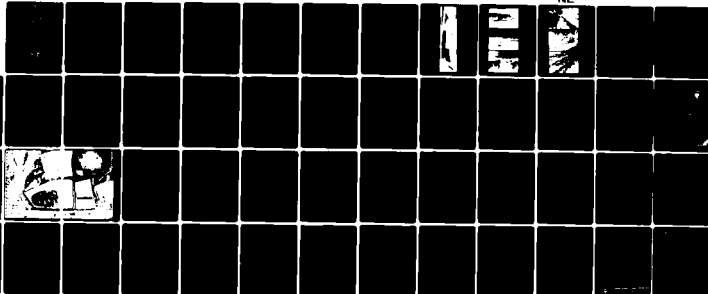
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MOHAWK RIVER BASIN

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CITY OF UTICA RESERVOIR 2
ONEIDA COUNTY,
NEW YORK

INVENTORY NO NY 197

(10) John B. Stetson

PHASE I INSPECTION REPORT,

(6) NATIONAL DAM SAFETY PROGRAM.

City of Utica Reservoir 2 (Inventory Number
NY 197), Mohawk River Basin.
Oneida County, New York.

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NEW YORK DISTRICT CORPS OF ENGINEERS

AUGUST 1980

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization. The Phase I inspection of the City of Utica Reservoir 2 did not indicate conditions which would constitute an immediate hazard to human life or property.		

The hydrologic/hydraulic analysis indicates that the impoundment will contain the runoff from the PMF without overtopping of the structure. Therefore, the spillway is assessed as adequate.

The following remedial work should be undertaken during normal maintenance operations within one year:

1. The seepage area at the toe of the northerly embankment should be kept under surveillance. Steps should be taken to document the area of seepage and the quantity of flow so that worsening of the condition may be readily recognized should it occur.
2. The concrete channel at the toe of the embankment should be repaired.
3. The riprap lining the channel at the toe of the westerly embankment should be repaired.
4. Woodchuck and/or muskrat burrows should be filled in and the rodents eliminated from the facility.
5. A flood warning and emergency evacuation system should be implemented to alert the public in the event conditions occur which could result in failure of the dam.
6. A formalized inspection system should be initiated to develop data on conditions and maintenance operations at the facility.

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

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TABLE OF CONTENTS

	<u>Page</u>
Preface	
Assessment of General Conditions	i-ii
Overall View of Dam	iii-v
Section 1 - Project Information	1-4
Section 2 - Engineering Data	5
Section 3 - Visual Inspection	6-7
Section 4 - Operational Procedures	8
Section 5 - Hydrologic/Hydraulic Computations	9-10
Section 6 - Structural Stability	11-12
Section 7 - Assessment/Remedial Measures	13-14

FIGURES

Figure 1 - Location Map	
Figure 2 - Plan and Profile of Dam	
Figure 3 - Piping Plan for Reservoir Nos. 2 and 5	
Figure 4 - Embankment Profile and Typical Cross Section	
Figure 5 - Aerial Photograph of Reservoir Nos. 2,4 and 5	

APPENDIX

Field Inspection Report	A
Previous Inspection Report/Relevant Correspondence	B
Hydrologic and Hydraulic Computations	C
References	D

PHASE I REPORT
NATIONAL DAM SAFETY PROGRAM

Name of Dam City of Utica Reservoir 2 NY197

State Located	<u>New York</u>
County Located	<u>Oneida</u>
Stream	<u>Not Applicable</u>
Date of Inspection	<u>July 23, 1980</u>

ASSESSMENT OF
GENERAL CONDITIONS

The Phase I inspection of the City of Utica Reservoir 2 did not indicate conditions which would constitute an immediate hazard to human life or property.


The hydrologic/hydraulic analysis indicates that the impoundment will contain the runoff from the PMF without overtopping of the structure. Therefore, the spillway is assessed as adequate.

The following remedial work should be undertaken during normal maintenance operations within one year:

1. The seepage area at the toe of the northerly embankment should be kept under surveillance. Steps should be taken to document the area of seepage and the quantity of flow so that worsening of the condition may be readily recognized should it occur.
2. The concrete channel at the toe of the embankment should be repaired.
3. The riprap lining the channel at the toe of the westerly embankment should be repaired.
4. Woodchuck and/or muskrat burrows should be filled in and the rodents eliminated from the facility.
5. A flood warning and emergency evacuation system should be implemented to alert the public in the event conditions occur which could result in failure of the dam.

6. A formalized inspection system should be initiated to develop data on conditions and maintenance operations at the facility.

Dale Engineering Company

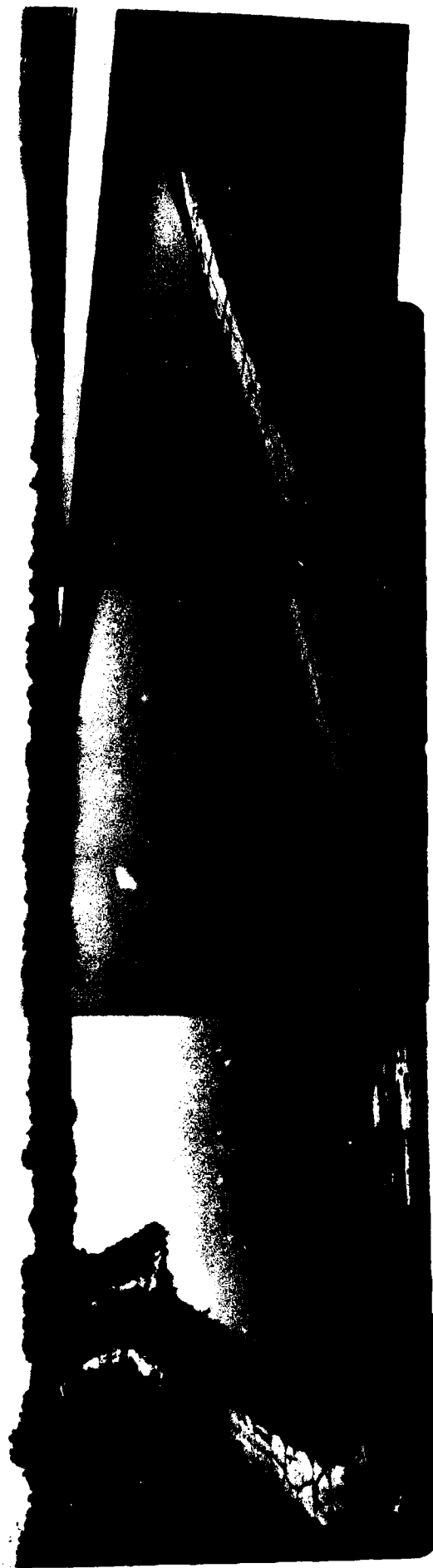

John B. Stetson, President

Approved By:
Date:

26 SEP 1980

Col. W. M. Smith, Jr.
New York District Engineer





1. View of Reservoir No. 2 looking north



2. Outlet weir



3. Channel downstream
from outlet weir.



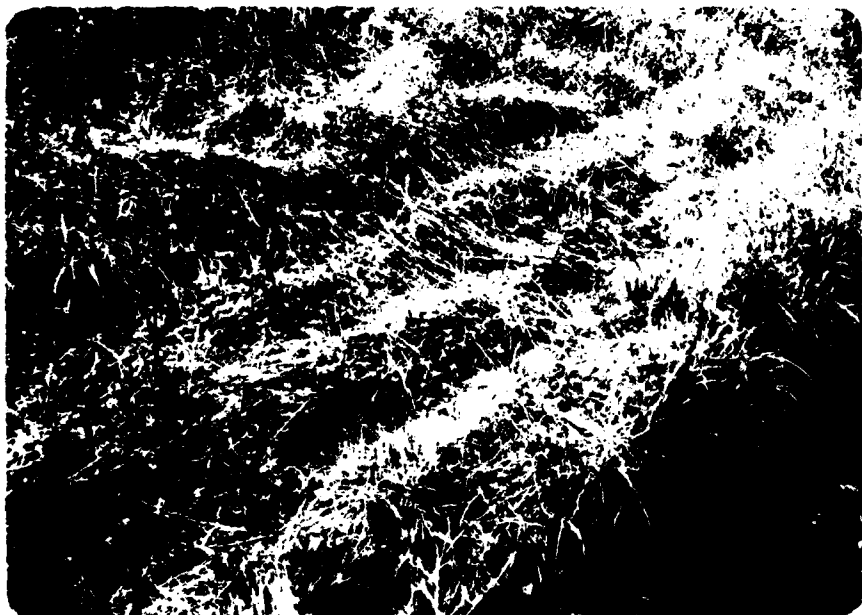
4. Drainage channel
upstream from
outlet weir.



5. Drainage channel
at toe of slope
at northerly dike.
Note failure of
channel wall on
dike side.



6. Area of seepage at
toe of northerly
dike.



7. Close up of Photo #6.

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
NAME OF DAM - CITY OF UTICA RESERVOIR 2 ID# - NY 197

SECTION 1 - PROJECT INFORMATION

1.1 GENERAL

a. Authority

Authority for this report is provided by the National Dam Inspection Act, Public Law 92-367 of 1972. It has been prepared in accordance with a contract for professional services between Dale Engineering Company and The New York State Department of Environmental Conservation.

b. Purpose of Inspection

The purpose of this inspection is to evaluate the existing condition of the City of Utica Reservoir 2 and appurtenant structures, owned by the City of Utica Board of Water Supply, Utica, New York, and to determine if the dam constitutes a hazard to human life or property and to transmit findings to the State of New York.

This Phase I inspection report does not relieve an Owner or Operator of a dam of the legal duties, obligations or liabilities associated with the ownership or operation of the dam. In addition, due to the limited scope of services for these Phase I investigations, the investigators had to rely upon the data furnished to them. Therefore, this investigation is limited to visual inspection, review of data prepared by others, and simplified hydrologic, hydraulic and structural stability evaluations where appropriate. The investigators do not assume responsibility for defects or deficiencies in the dam or in the data provided.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam and Appurtenances

The City of Utica Reservoir 2 is located in the Town of New Hartford immediately adjacent to the City of Utica boundary. The reservoir is the lowest of a system of three reservoirs which presently provide a source of emergency water supply to the City of Utica. The dam consists of an earthen embankment approximately 1380 feet long with a maximum height of approximately 25 feet and slopes of 1-1/2 horizontal to 1 vertical on the upstream face and 2 to 1 on the downstream face. A concrete overflow weir approximately 17 feet wide is situated on the westerly side of the impoundment. This weir discharges into a drainage channel which collects drainage from the south and west of the site. This drainage channel then flows along the toe of the westerly and northerly dike sections to a culvert located on Pleasant Street in the City of Utica.

b. Location

The City of Utica Reservoir Two is located in the Town of New Hartford, Oneida County, New York.

c. Size Classification

The maximum height of the dam is approximately 25 feet. The volume of the impoundment is approximately 111 acre feet. Therefore, the dam is in the Small Size Classification as defined by the Recommended Guidelines for Safety Inspection of Dams.

d. Hazard Classification

The impoundment is located immediately adjacent to a heavily developed residential section of the City of Utica. Therefore, the dam is in the High Hazard Category as defined by The Recommended Guidelines for Safety Inspection of Dams.

e. Ownership

The dam is owned by the City of Utica Board of Water Supply, Utica, New York.

Contact: General Manager
Utica Board of Water Supply
City Hall
1 Kennedy Plaza
Utica, New York 13502
Telephone: 315-798-3310

f. Purpose of the Dam

The dam is used as a water supply reservoir for the City of Utica. At the present time, the dam is used only as an emergency supply and is not directly connected into the water system of the City of Utica.

g. Design and Construction History

The reservoir was constructed in 1868 and was the first of the three reservoirs situated on the site. Very little appears to have changed from the original construction. Plans for Reservoir No. 5 dated January, 1896, show a plan of Reservoir No. 2 which substantially conforms to the present configuration.

h. Normal Operational Procedures

At the present time water level in the impoundment is maintained only by the rainfall which enters the impoundment by falling on the water surface or the slopes immediately adjacent thereto. This reservoir has not been used as a part of the public water supply for approximately 30 to 40 years.

1.3 PERTINENT DATA

a. Drainage Area

The drainage area of the reservoir is approximately 48.5 acres.

b. Discharge at Dam Site

Discharge at the overflow weir is related only to rainfall which occurs at the site.

c. Elevation (Feet Above MSL)

Top of Dam	603.6+
Normal Pool	600.6

d. Reservoir

Length of Normal Pool (maximum)	850 feet±
---------------------------------	-----------

e. Storage

Normal Pool	111 Acre Feet
	36,086,000 Gallons

f. Reservoir Area

Normal Pool	12.6 Acres
-------------	------------

g. Dam

Type - Compacted Earth Fill.
Length - 1380 feet.
Height - Varies, 25 Feet maximum.
Freeboard - 3 Feet normal reservoir to top of dam.
Top Width - 10 Feet.
Side Slopes - Upstream - 1-1/2 Horizontal:1 Vertical
 - Downstream - 2 Horizontal:1 Vertical
Zoning - No Data.
Impervious Core - No Data.
Grout Curtain - No Data.

h. Spillway

Type - Broad Crested Weir

Width - 17 Feet.

Elevation - 600.6₊

i. Reservoir Drain

12 inch valved drain pipe to channel at toe of northerly embankment.

SECTION 2 - ENGINEERING DATA

2.1 GEOTECHNICAL DATA

a. Geology

The dam is located near the base of the northern slope of the Appalachian Plateau Province, in the Mohawk section of that Province.

The area had been subjected to glacial activity and is underlain by shaley black claystones of the Utica Shale formation of Upper Ordovician age.

The dam is probably sited on glacial material which overlies finely laminated shale claystone.

Bedding is close to horizontal in the area, with a gentle dip of less than 1° to the south. Jointing is present in the shale and shows two prevalent directions, N20°E and N65°E.

Glacial cover is apparently of stratified sand and gravel and may represent a deltaic terrace of deposition. Depth of this glaciolacustrine debris may vary from a thin veneer to no more than a few tens of feet.

b. Subsurface investigations

No subsurface information was available concerning the foundation of the original embankment.

2.2 DESIGN RECORDS

No reports were available from the original design of the dam. Design drawings 2, 3, and 4 are included in this report.

2.3 CONSTRUCTION RECORDS

No information was available concerning the original construction.

2.4 OPERATIONAL RECORDS

There are no operation records available for this dam.

2.5 EVALUATION OF DATA

The data presented in this report was obtained from the Department of Environmental Conservation files and from the City of Utica Board of Water Supply. The information available appears to be reliable and adequate for a Phase I inspection report.

SECTION 3 - VISUAL INSPECTION

3.1 FINDINGS

a. General

The City of Utica Reservoir 2 was inspected on July 23, 1980. The Dale Engineering Company Inspection Team was accompanied on the inspection by Russell S. LoGalbo, Principal Engineer for the City of Utica Board of Water Supply.

b. Dam

At the time of the inspection, the water level in the impoundment was approximately 4 inches below the spillway level. The slopes of the earthen dike were uniform and no evidence of displacement was detected. Some woodchuck burrows were found on the downstream face of the earthen dike. These burrows had been marked by maintenance personnel. Mr. LoGalbo indicated that the Board of Water Supply was considering a program for elimination of the woodchucks. Some seepage was detected at the toe of the slope near the center of the northerly embankment. Mr. LoGalbo indicated that this seepage has existed for at least since 1966 and that it remains constant in both size of the seepage area and quantity of flow. The flow from this area is described as minimal with no signs of piping or boiling evident in the area.

c. Appurtenant Structures

The drainage channel which flows along the toe of the westerly and northerly embankments show some sign of erosion and some displacement of the riprap. The concrete walls which forms the channel at the toe of the northerly embankment shows signs of structural failure. However, this failure appears to have taken place long ago and very little movement of the slope of the embankment is in evidence.

d. Control Outlet

The outlet of the impoundment consists of a 17 foot wide concrete broad crested wier. This structure is in operating condition at the present time.

e. Reservoir Area

The reservoir area covers approximately 12-1/2 acres. Minor sloughing has occurred at the water line in some areas. The configuration of these areas suggests the possibility of muskrat burrows having existed at one time.

f. Downstream Channel

The downstream channel shows minor signs of erosion and some displacement of the riprap on the embankment side of the channel.

3.2 EVALUATION

The visual inspection revealed that the embankment is generally in good condition. Minor seepage has occurred over a long period of time at the toe of the northerly embankment. This seepage has been continually monitored by personnel from the City of Utica Board of Water Supply. Woodchuck holes were detected on the downstream face of the embankment and localized sloughing at the waterline is suggestive of the existence of muskrat burrows. The channel running along the westerly toe shows some evidence of displacement of its riprap. This condition could result in undesirable erosion of the toe of the embankment under high flows, therefore this riprap should be repaired. Continual surveillance should be maintained at the point of seepage to detect any worsening of the present condition. Appropriate steps should be taken to eliminate woodchucks and muskrats from the embankment.

SECTION 4 - OPERATIONAL PROCEDURES

4.1 PROCEDURES

This reservoir is used only as an emergency source of water for the City of Utica Water Supply system. At the present time, the valves controlling flow from the reservoir are fully closed. No use has been made of this facility for approximately 30 to 40 years. Water level in the impoundment varies with rainfall throughout the year.

4.2 MAINTENANCE OF THE DAM

Maintenance and operation of the dam is controlled by the City of Utica Board of Water Supply. Periodic visits are made to the site to check on conditions of the facilities. No formal operating system is in effect at this site.

4.3 MAINTENANCE OF OPERATING FACILITIES

The valves controlling flow into the impoundment have not been operated in many years but are believed to be in operating condition.

4.4 DESCRIPTION OF WARNING SYSTEM

No warning system is in effect at present.

4.5 EVALUATION

The dam and appurtenances are normally inspected by representatives of the Utica Board of Water Supply. The facility is presently in good condition and adequately maintained. Constant surveillance is maintained on the area of seepage at the toe of the northerly embankment. Since this dam is in the high hazard classification, a warning system should be implemented to alert the public should conditions occur which could result in failure of the dam.

SECTION 5 - HYDROLOGIC/HYDRAULIC

5.1 DRAINAGE AREA CHARACTERISTICS

Utica Reservoir No. 2 is located on the southeast fringe of the City of Utica. The dam has a drainage area of approximately 48.5 acres consisting of a wooded and grassed hillsides, the reservoir with a surface area of 12.6 acres, and the berms forming the reservoir's embankment.

5.2 ANALYSIS CRITERIA

The purpose of this investigation is to evaluate the dam and spillway with respect to their flood control potential and adequacy. This has been assessed through the evaluation of the Probable Maximum Flood (PMF) for the watershed and the subsequent routing of the flood through the reservoir and the dam's spillway system. The PMF event is that hypothetical flow induced by the most critical combination of precipitation, minimum infiltration loss and concentration of run-off of a specific location that is considered reasonably possible for a particular drainage area. The dam is in the Small Dam Category and is a High Hazard.

The hydrologic analysis was performed using the unit hydrograph method to develop the flood hydrograph. Due to the limited scope of this Phase I investigation, certain assumptions, based on experience and existing data were used in this analysis and in the determination of the dam's spillway capacity to pass the PMF.

The U.S. Army Corps of Engineers' Hydrologic Engineering Center's Computer Program HEC-1 DB using the Modified Puls Method of flood routing was used to evaluate the dam and spillway capacity. Unit hydrographs were defined by Snyder coefficients, C_t and C_p . Snyder's C_t was estimated to be 2.0 for the drainage area and C_p was estimated to be 0.625.

The Probable Maximum Precipitation (PMP) was 19.2 inches according to Hydrometeorological Report (HMR #33) for a 24-hour duration storm, 200 square mile basin, while loss rates were set at 1.0 inches initial abstraction and 0.1 inches/hour continuous loss rate. The loss rate function yielded 89 percent run-off from the PMF. The peak for the PMF inflow hydrograph was 260 cfs and the 1/2 PMF inflow peak was 130 cfs. The large storage capacity of the reservoir, in relation to the size of the contributing drainage area, reduced these peak flows to 157 cfs for the PMF and 70 cfs for the 1/2 PMF.

5.3 SPILLWAY CAPACITY

The spillway consists of a concrete overflow weir approximately 17 feet wide. The crest slopes up somewhat from the reservoir to where it drops down into the channel running around the perimeter of the

embankment which serves as the spillway channel. A weir coefficient of 2.65 was assumed for the spillway rating curve development. The discharge capacity of the spillway at the top of dam elevation is 234 cfs.

SPILLWAY CAPACITY

<u>Flood</u>	<u>Peak Discharge</u>	<u>Capacity as % of Flood Discharge</u>
PMF	157 cfs	149%
1/2 PMF	70 cfs	334%

In this analysis, all of the runoff from the contributing area was assumed to flow into the reservoir. The ditch along the south of Reservoir No. 5 was assumed to divert flow from the hillside to the south of it towards Reservoir No. 2. Likewise, flow along the road to the south of Reservoir No. 2 was assumed to flow through a break in the curb (or over the curb) into Reservoir No. 2. In actuality some of the runoff from these areas may not flow into Reservoir No. 2.

5.4 RESERVOIR CAPACITY

The reservoir storage capacity was estimated from plans of the reservoir. The resulting estimates of the reservoir storage capacity are shown below:

Top of Dam	149 Acre Feet
Spillway Crest	111 Acre Feet

5.5 FLOODS OF RECORD

There is no information on water levels at the dam site.

5.6 OVERTOPPING POTENTIAL

The HEC-1 DB analysis indicates that the spillway can pass the PMF with 0.7 feet of freeboard and the 1/2 PMF with 1.7 feet of freeboard.

5.7 EVALUATION

The hydrologic/hydraulic analysis indicates that the spillway is capable of passing the Probable Maximum Flood (PMF) with 0.7 feet of freeboard. Therefore, the spillway is assessed as adequate according to the Corps of Engineers screening criteria.

SECTION 6 - STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

The City of Utica Reservoir No. 2 is one of a complex of three basins situated just south of the City of Utica, New York. The water level in Reservoir No. 2 is at elevation 600.6+. Reservoir No. 5, situated immediately to the east of Reservoir 2, has a water elevation of 681.5+. Reservoir No. 4, situated to the south is at elevation 654.2+. These three reservoirs are used as an emergency source of water for the City of Utica Board of Water Supply system which serves the City of Utica and adjoining communities. All of the slopes of the embankment forming the reservoir are generally in good condition, with no evidence of structural movement or cracking. Some woodchuck burrows were found in the downstream slope of the reservoir. Minor sloughing at the waterline of the impoundment suggests the presence of muskrat burrows. Examination of the slopes of Reservoir No. 2 indicates minor seepage occurring through the northerly embankment. Officials of the City of Utica Board of Water Supply indicate that this seepage has existed for many years (since 1966 which is the present engineers date of involvement) without noticeable change in area or quantity of flow. A channel carrying Ballou Creek runs around the perimeter of the impoundment from the spillway area until it crosses underneath the road to the north of the reservoir. The riprap lining the channel along the west side of the reservoir shows some evidence of displacement with some resulting erosion. This condition could result in undesirable erosion of the toe of the embankment under high flows.

b. Seismic Stability

No known faults exist in the area of the reservoir, however, the Preliminary Brittle Structures Map of 1977 does show a lineament to be present about one-third mile north of the reservoir. The only earthquake of significance for the Utica area occurred in 1840 about 12 miles southeast of the reservoir. It had an intensity of V-VII on the Modified Mercalli scale. In 1930 an earthquake of intensity II took place about four miles to the west-northwest. Other minor tremors have occurred on occasion in the general area.

c. Data Review and Stability Evaluation

Drawings included in the report substantially conform to the configuration of the facility as it presently exists. The drawings do not indicate the materials of construction. The upstream slopes were constructed to a slope of 1-1/2 horizontal on 1 vertical and the downstream slope 2 horizontal on 1 vertical. Embankments and impounding slopes are in good condition structurally. Grass on the slopes has been mowed and the structure shows evidence of proper maintenance.

Woodchuck burrows on the downstream slope and muskrat burrows at the waterline of the impoundment should be eliminated by removal of the rodents and filling of the burrows. On the basis of the visual examination, the earthen embankment of the reservoir appears to be adequate for normal reservoir operation. Properly maintained, the reservoir's earth structures are expected to retain stability for loading conditions comparable to those of the past. Continued surveillance should be maintained on the area of seepage to detect any worsening of the conditions. The riprap lining the channel along the westerly toe shows some evidence of displacement and resulting erosion. This riprap should be repaired to prevent erosion of the embankment toe under high flows. A formalized inspection system should be adopted to document conditions at the reservoir and the maintenance procedures undertaken at the site.

SECTION 7 - ASSESSMENT/REMEDIAL MEASURES

7.1 DAM ASSESSMENT

a. Safety

The Phase I inspection of the City of Utica Reservoir 2 did not indicate conditions which would constitute an immediate hazard to human life or property.

The hydrologic/hydraulic analysis indicates that the impoundment will contain the runoff from the PMF without overtopping of the structure.

The visual inspection did not reveal conditions which would indicate evidence of structural displacement or instability.

The following specific safety assessments are based on the Phase I Visual Examination and Analysis of Hydrology and Hydraulics:

1. Minor seepage is occurring near the toe of the northerly embankment sective.
2. Structural failure has occurred in the concrete channel wall at the toe of the northerly embankment.
3. The riprap lining the channel running along the toe of the west-erly embankment shows evidence of displacement with some result-ing erosion.
4. Woodchuck burrows were found to exist on the downstream slopes of the embankment. Localized sloughing at the waterline of the reservoir suggests the presence of muskrat burrows.
5. No warning system is presently in effect to alert the public should conditions occur which could result in failure of the dam.
6. No formalized inspection system is in effect at the facility.

b. Adequacy of Information

The information available is adequate for this Phase I investigation.

c. Urgency

Items 1 through 5 of the Safety Assessment should be addressed by the owner and appropriate actions taken within one year of this notifica-tion.

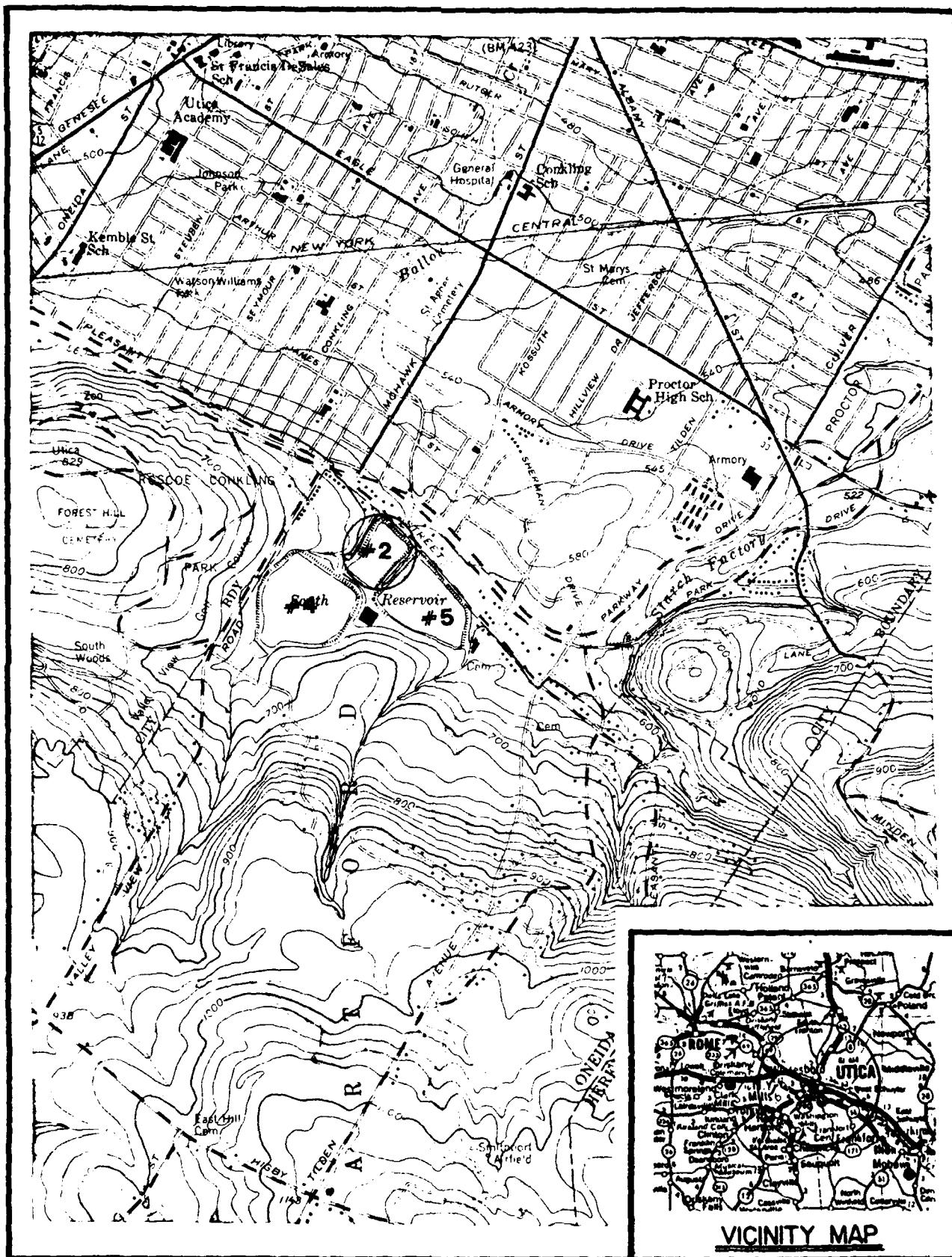
d. Need for Additional Investigation

This Phase I inspection has not revealed the need for additional investigations regarding this structure.

7.2 RECOMMENDED MEASURES

The following is a list of recommended measures to be undertaken to insure safety of the facility:

1. The seepage area at the toe of the northerly embankment should be kept under surveillance. Steps should be taken to document the area of seepage and the quantity of flow so that worsening of the condition may be readily recognized should it occur.
2. The concrete channel at the toe of the embankment should be repaired.
3. The riprap lining the channel at the toe of the westerly embankment should be repaired.
4. Woodchuck and/or muskrat burrows should be filled in and the rodents eliminated from the facility.
5. A flood warning and emergency evacuation system should be implemented to alert the public in the event conditions occur which could result in failure of the dam.
6. A formalized inspection system should be initiated to develop data on conditions and maintenance operations at the facility.



LOCATION PLAN

FIGURE 1

Map Roads and Properties made for the
UTICA WATER WORKS COMPANY

See Index inside
Running N.W. 1/4

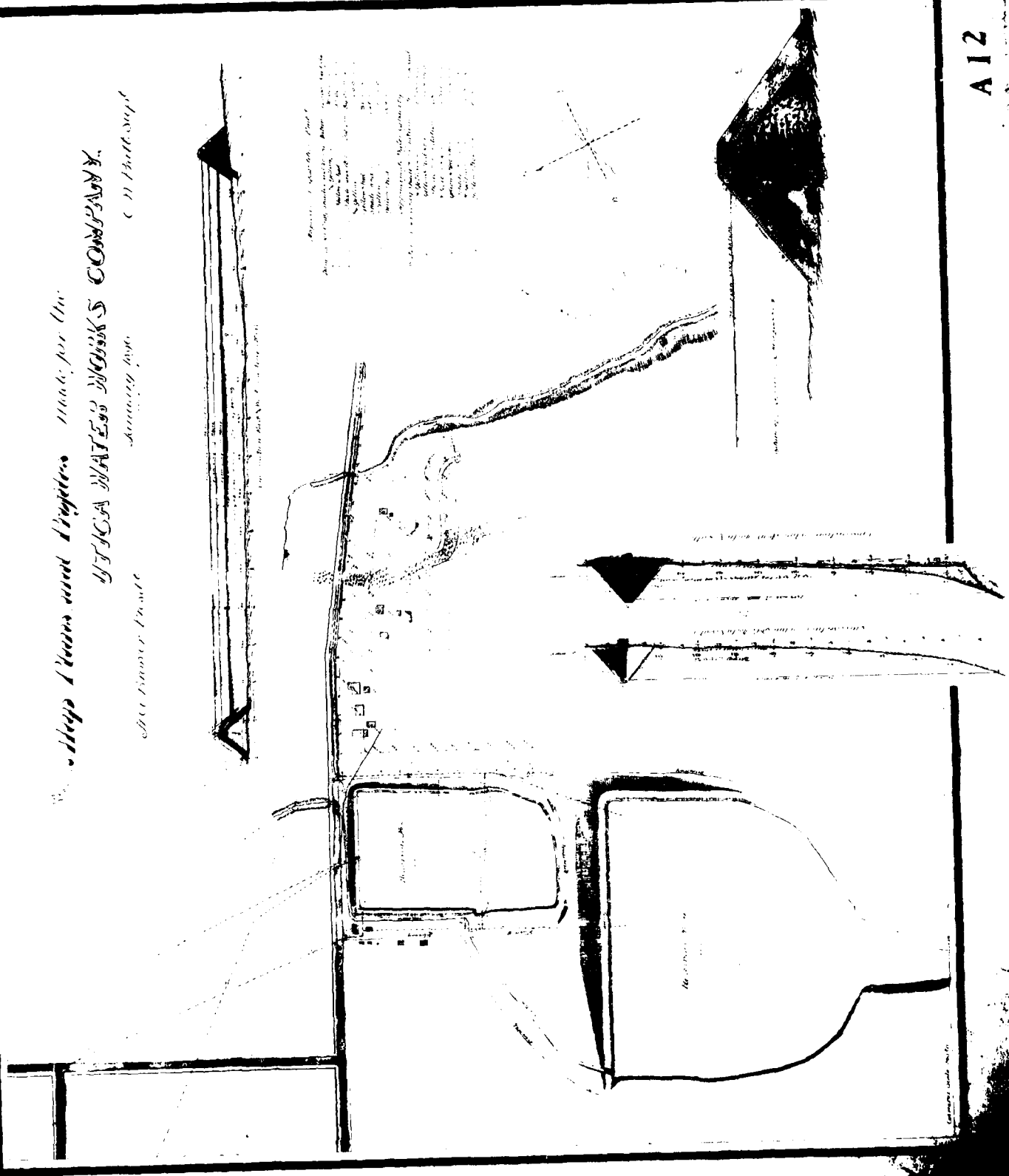


FIGURE 2

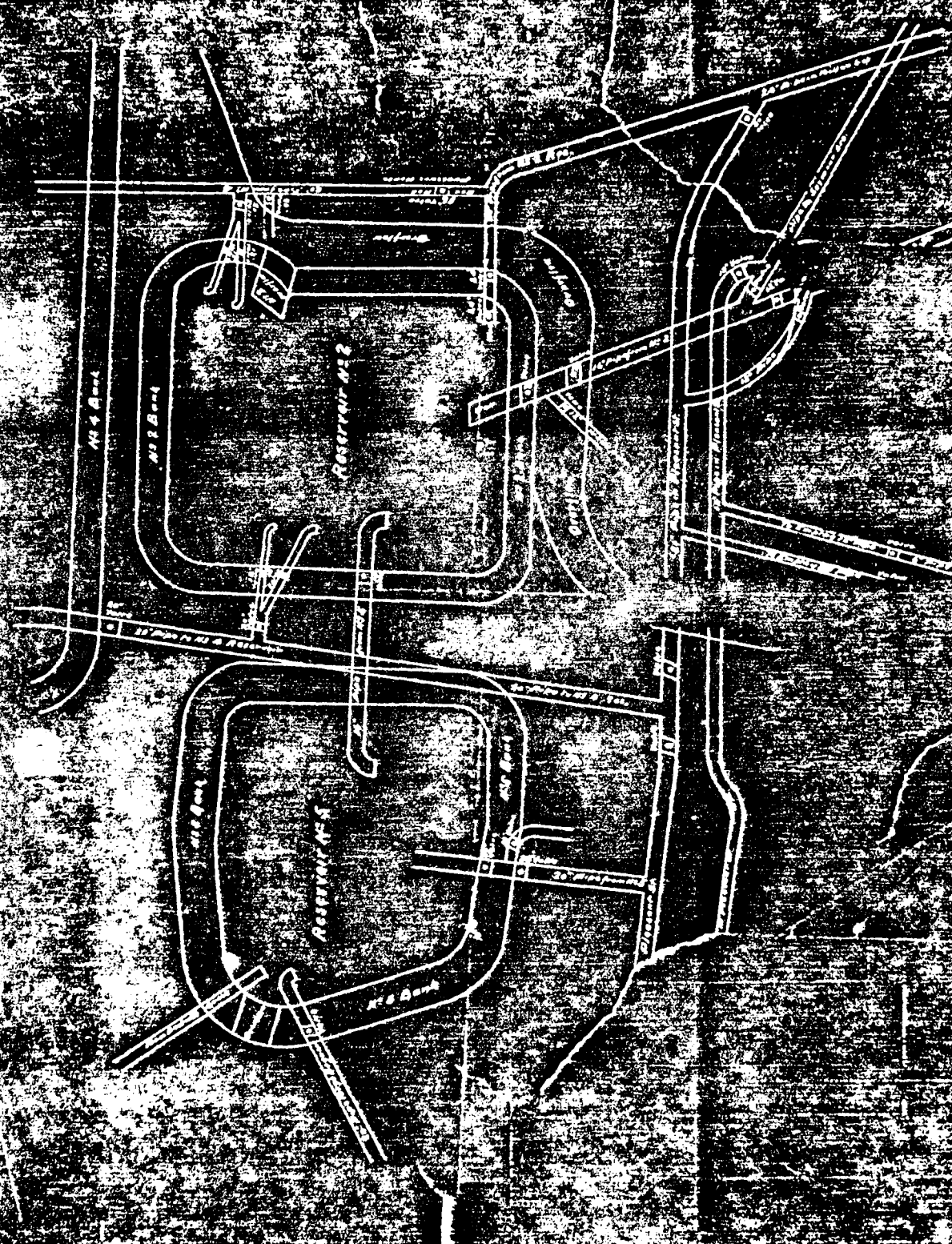
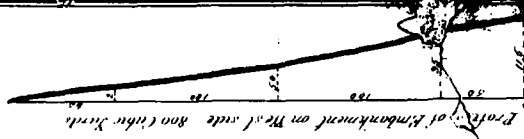
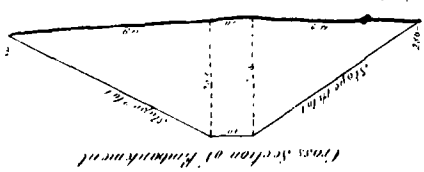
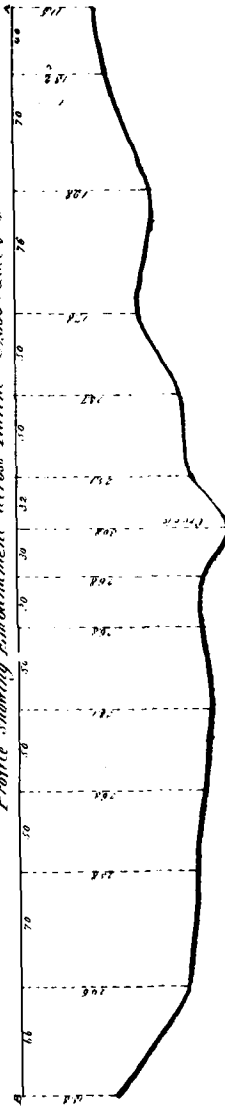


FIGURE 3

2
RESERVATION
at
Beckwith
JANUARY 1907



Profile showing Embankment across Harrie 27600 cubic Yds.



A-33

Profile view of a reserve at Beckwith
The Harrie Canal is a long narrow canal
to the west of the canal between the
Harrie and the Harrie Canal
Harrie and the Harrie Canal
Harrie and the Harrie Canal

A-33

FIGURE 4



RESERVOIR 4

RESERVOIR 2

APPENDIX A
FIELD INSPECTION REPORT

CHECK LIST
VISUAL INSPECTION

PHASE 1

Name Dam Utica Reservoir #2 County Oneida State New York ID # NY 197

Type of Dam Earth Berm Hazard Category High

Date(s) Inspection 7-23-80 Weather Cloudy Temperature 80's

Pool Elevation at Time of Inspection 600.2 M.S.L. Tailwater at Time of Inspection N/A

Inspection Personnel:

<u>F.W. Byszewski, P.E.</u>	<u>Dale Engineering Company</u>
<u>D.F. McCarthy, P.E.</u>	<u>Dale Engineering Company</u>
<u>H. Muskatt</u>	<u>Dale Engineering Company</u>
<u>J.A. Gomez, P.E.</u>	<u>Dale Engineering Company</u>
<u>R.S. LoGalbo, P.E.</u>	<u>Utica Board of Water Stupply</u>

J. A. Gomez Recorder

CONCRETE/MASONRY DAMS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
ANY NOTICEABLE SEEPAGE	N/A	
STRUCTURE TO ABUTMENT/EMBANKMENT JUNCTIONS	N/A	
DRAINS	N/A	
WATER PASSAGES	N/A	
FOUNDATION	N/A	

CONCRETE/MASONRY DAMS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS CONCRETE SURFACES	N/A	
STRUCTURAL CRACKING	N/A	
VERTICAL & HORIZONTAL ALIGNMENT	N/A	
MONOLITH JOINTS	N/A	
CONSTRUCTION JOINTS	N/A	
STAFF GAGE OF RECORDER	N/A	

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS	NONE OBSERVED	
UNUSUAL MOVEMENT OR CRACKING AT OR BEYOND THE TOE	NONE OBSERVED	
SLOUGHING OR EROSION OF EMBANKMENT AND ABUTMENT SLOPES	NONE OBSERVED	Animal holes on south and west berms.
VERTICAL AND HORIZONTAL ALIGNMENT OF THE CREST	NO MISALIGNMENT OBSERVED	
RIPRAP FAILURES	NONE OBSERVED	

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
JUNCTION OF EMBANKMENT AND ABUTMENT, SPILLWAY AND DAM	OK	
ANY NOTICEABLE SEEPAGE	Seepage occurring on notherly embank- ment along Pleasant St. No noticeable change in 14 yrs. No boils. No sloughing. No piping observed.	
STAFF GAGE AND RECORDER	NONE	
DRAINS	NONE	

UNGATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE WEIR	GOOD CONDITION	Some debris on spillway crest.
APPROACH CHANNEL	IMPOUNDMENT	
DISCHARGE CHANNEL	Along toe of west and north embankment.	Rip Rap in poor condition along west embankment. Structural failure of wall of concrete channel at toe of north embankment. (appears to be long standing, not recent)
BRIDGE AND PIERS	NONE	

GATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE SILL	N/A	
APPROACH CHANNEL	N/A	
DISCHARGE CHANNEL	N/A	
BRIDGE AND PIERS	N/A	
GATES AND OPERATION EQUIPMENT	N/A	

OUTLET WORKS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CRACKING AND SPALLING OF CONCRETE SURFACES IN OUTLET CONDUIT	N/A	
INTAKE STRUCTURE	N/A	
OUTLET STRUCTURE	N/A	
OUTLET CHANNEL	N/A	
EMERGENCY GATE	N/A	

DOWNSTREAM CHANNEL

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONDITION (OBSTRUCTIONS, DEBRIS, ETC.)	SEE SHEET 6	
SLOPES	SEE SHEET 6	
APPROXIMATE NO. OF HOMES AND POPULATION	Heavily developed residential area.	

INSTRUMENTATION

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
MONUMENTATION/SURVEYS	NONE	
OBSERVATION WELLS	NONE	
WEIRS	NONE	
PIEZOMETERS	NONE	
OTHER	NONE	

RESERVOIR

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SLOPES	Some sloughing very localized appears to be muskrat burrows.	
SEDIMENTATION	NONE OBSERVED	

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
PHASE 1

NAME OF DAM Utica Reservoir 2
 ID # NY 197

ITEM	REMARKS
AS-BUILT DRAWINGS	None Available
REGIONAL VICINITY MAP	See Report - U.S.G.S. Map
CONSTRUCTION HISTORY	None Available
TYPICAL SECTIONS OF DAM	See Report
OUTLETS - PLAN - DETAILS - CONSTRAINTS - DISCHARGE RATINGS	No Details Available " " "
RAINFALL/RESERVOIR RECORDS	None Available

ITEM	REMARKS
DESIGN REPORTS	None Available
GEOLOGY REPORTS	None Available
DESIGN COMPUTATIONS HYDROLOGY & HYDRAULICS DAM STABILITY SEEPAGE STUDIES	None Available
MATERIALS INVESTIGATIONS BORING RECORDS LABORATORY FIELD	None Available
POST-CONSTRUCTION SURVEYS OF DAM	None Available
BORROW SOURCES	NO DATA AVAILABLE

ITEM	REMARKS
MONITORING SYSTEMS	None
MODIFICATIONS	No Data
HIGH POOL RECORDS	No Data
POST CONSTRUCTION ENGINEERING STUDIES AND REPORTS	None Available
PRIOR ACCIDENTS OR FAILURE OF DAM DESCRIPTION REPORTS	No Record
MAINTENANCE OPERATION RECORDS	None Available

ITEM	REMARKS
SPILLWAY PLAN SECTIONS DETAILS	No Data Available
OPERATING EQUIPMENT PLANS & DETAILS	No Data Available

CHECK LIST
HYDROLOGIC & HYDRAULIC
ENGINEERING DATA

DRAINAGE AREA CHARACTERISTICS: 48.5 AC

ELEVATION TOP NORMAL POOL (STORAGE CAPACITY): 600.6

ELEVATION TOP FLOOD CONTROL POOL (STORAGE CAPACITY): N/A

ELEVATION MAXIMUM DESIGN POOL: N/A

ELEVATION TOP DAM: 603.6

CREST:

a. Elevation 600.6

b. Type Broad Crested

c. Width 17 ft.

d. Length 4 ft. ±

e. Location Spillover West side of impoundment

f. Number and Type of Gates None

OUTLET WORKS:

a. Type Broad Crested Weir

b. Location West side of empoundment

c. Entrance Inverts 600.6

d. Exit Inverts Not Measured

e. Emergency Draindown Facilities 12" Dia. valved pipe

HYDROMETEOROLOGICAL GAGES:

a. Type None

b. Location None

c. Records None

MAXIMUM NON-DAMAGING DISCHARGE: No data available.

APPENDIX B

PREVIOUS INSPECTION REPORTS/RELEVANT CORRESPONDENCE

802 B mch

FORM 10-17-16 A 10-18-16

(NOTICE: After filling out one of these forms as completely as possible for each dam in your district, return it at once to the Conservation Commission, Albany.)

STATE OF NEW YORK
CONSERVATION COMMISSION
ALBANY

128 b

DAM REPORT

Aug 6, 1917
(Date)

CONSERVATION COMMISSION,

DIVISION OF INLAND WATERS.

GENTLEMEN:

I have the honor to make the following report in relation to the structure known as the Reservoir No. 2 City of Utica Dam.

~~This dam is situated upon the~~ Reservoir is fed from Ballou Creek
~~in the Town of~~ City of Utica Oneida County,
about _____ from the Village or City of _____
(State distance)

The distance _____ stream from the dam, to the _____
(Up or down) (Give name of nearest important stream or of a bridge)
is about _____
(State distance)

The dam is now owned by Reservoir is owned by Consolidated Water Co.
and was built in or about the year 1890, and was extensively repaired or reconstructed Utica NY
during the year _____

A cobble covered depression is placed in the embankment
As it now stands, the spillway portion of this dam is built of _____
which provides for a possible overflow. This is 20 ft wide
and the other portions are built of _____
(State whether of masonry, concrete, or timber with or without rock fill)

As nearly as I can learn, the character of the foundation bed under the spillway portion of the dam is _____ and under the remaining portions such foundation bed is _____

This reservoir is in good condition.
The total length of this dam is.....feet. The spillway or waste-weir portion, is about.....feet long, and the crest of the spillway is about.....feet below the top of the dam.

The number, size and location of discharge pipes, waste pipes or gates which may be used for drawing off the water from behind the dam, are as follows: *Water goes to*

City through a conduit 24 in. in diameter

State briefly, in the space below, whether, in your judgment, this dam is in good condition, or bad condition, describing particularly any leaks or cracks which you may have observed.)

This reservoir is in good condition.

Capacity 150 ^{million} gal.

Reported by *William H. Ford*

(Signature)

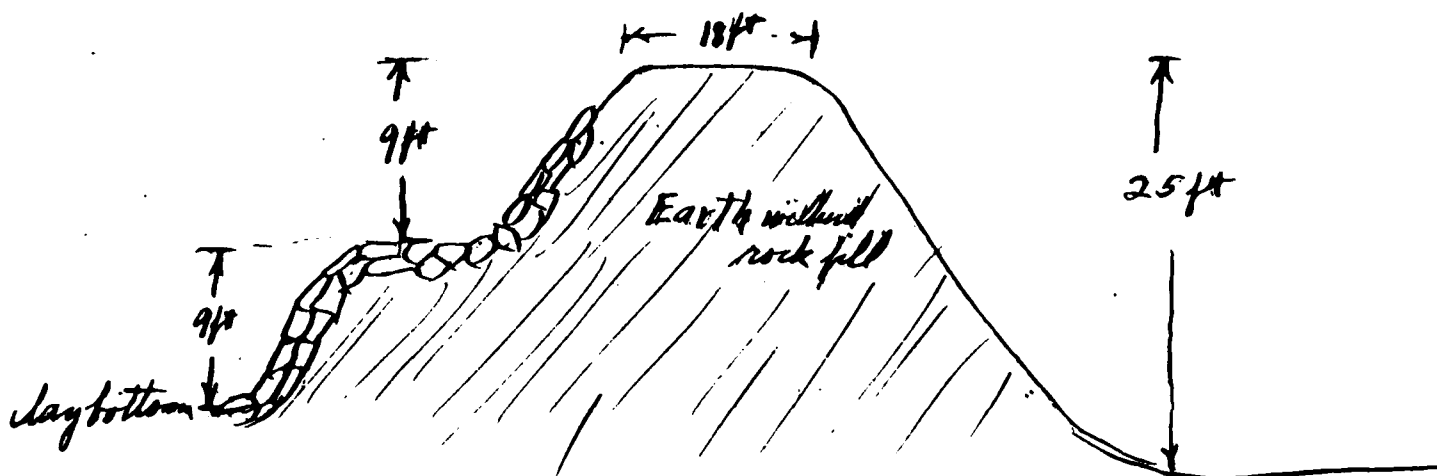
Conservation Commission, Albany, N. Y.

(Address—Street and number, P. O. Box or R. P. D. route)

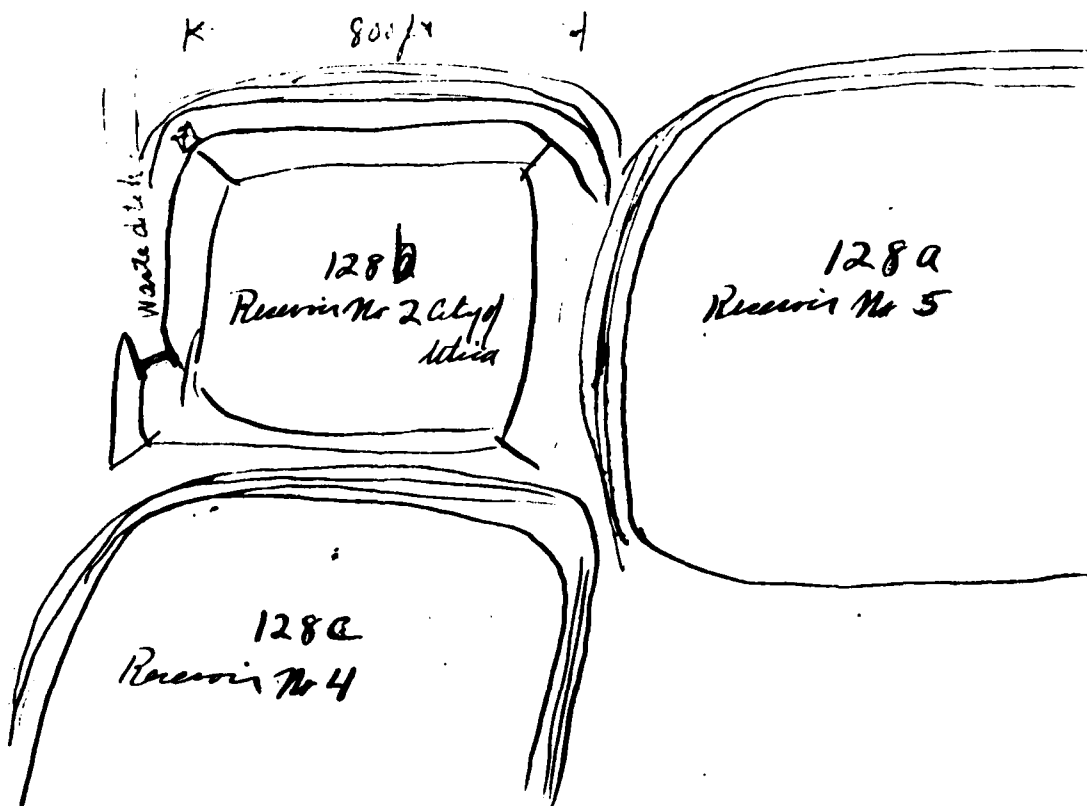
Albany, N. Y.
(Name of place)

(SEE OTHER SIDE)

(In the space below, make one sketch showing the form and dimensions of a cross section through the spillway or waste-weir of this dam, and a second sketch showing the same information for a cross section through the other portion of the dam. Show particularly the greatest height of the dam above the stream bed, its thickness at the top, and thickness at the bottom, as nearly as you can learn.)



(In the space below, make a third sketch showing the general plan of the dam, and its approximate position in relation to buildings or other conspicuous objects in the vicinity.)



APPENDIX C

HYDROLOGIC AND HYDRAULIC COMPUTATIONS



STETSON • DALE

DATE 8-8-80

DRAWN D.M.E.

JOB 2399

APP'D

DRAINAGE
AREA

**STETSON • DALE**BANKERS TRUST BUILDING
UTICA • NEW YORK • 13501

TEL 315-797-5800

DESIGN BRIEF

PROJECT NAME N.Y.S. Dam Inspections - 1980 DATE _____
SUBJECT Utica Reservoir #2 PROJECT NO. _____
Depth-Area-Duration DRAWN BY _____

PMP - from HMR #33

for Lat. $\approx 43^{\circ}4'$ Long. $\approx 75^{\circ}15'$
Index Rainfall = 19.2" for 200 mi², 24 hr.

<u>Duration</u>	<u>% Index</u> [*]	<u>Depth</u>
6 hrs	111	21.3"
12 hrs	123	23.6
24 hrs	133	25.5
48 hrs	142	27.3

* Adjusted for area (these are adjusted for 10 mi², the lower limit of the areal adjustment graph)

**STETSON • DALE**BANKERS TRUST BUILDING
UTICA • NEW YORK • 13501
TEL 315-797-5800**DESIGN BRIEF**

PROJECT NAME N.Y.S. Dam Inspections - 1980 DATE _____
SUBJECT Utica Reservoir #2 PROJECT NO. _____
DRAWN BY _____

Drainage Area = 48.5 ac = 0.076 mi²
Reservoir Area = 12.6 ac = 0.0197 mi²

Snyder Parameters

$L = 0.303 \text{ mi}$ $L_{CA} = 0.15 \text{ mi}$

Assume $C_t = 2.0$, $C_r = 0.625$

$$t_p = C_t (L \times L_{CA})^{0.13} = 2 (.303 \times .15)^{0.13} = 0.179 \text{ hr.}$$

Spillway Capacity

Length ~ 17'

Conservatively assuming a broad-crested weir, $C = 2.65$ (actual configuration should give somewhat higher C)

Freeboard @ normal pool ~ 3'

Capacity at top of dam elevation

$$Q = CLH^{3/2} = 2.65 (17') (3')^{3/2} = 234 \text{ cfs}$$

 FLOOD HYDROGRAPH PACKAGE (FEC-1)
 DAM SAFETY VERSION JULY 1978
 LAST MODIFICATION 26 FEB 79

RUN DATE 7-20-80 AUG 10 1980
 TIME 07:23:13

UTICA RESERVOIR NO. 2 NY. NO. 197
 REC-10B (SNYDER PARAMETERS)
 FPF DAM OVER TOPPING ANALYSIS

JOB SPECIFICATION									
NO	NR	MIN	IDAY	IMR	IPIN	METRC	IFLT	IPRT	NSTAN
201	0	15	0	0	0	0	0	4	0
			JCFER	NWT	LROPT	TRACE			
			5	0	0	0			

MULTI-PLAN ANALYSES TO BE PERFORMED
 NPLAN= 1 NRTIC= 5 LRTIC= 1
 RTIC= 0.30 0.50 0.60 0.80 1.00

***** ***** *****

SUB-AREA RUNOFF COMPLETION

RUNOFF COMPUTATION

ISTAQ	ICMFF	IECON	ITAFE	JFLT	JFPT	INAME	ISTAGE	IUTO
100	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

INLGA	IURG	TAREA	SNAP	TRSDA	TKSPC	RATIO	ISNG	ISAME	LOCAL
1	1	0.08	0.00	0.08	0.00	0.00	0	1	0

PRECIP DATA

SFE	FMS	R	K12	K24	R42	P72	R92
0.0	19.20	111.0	123.0	123.00	142.00	0.00	0.00

IRSFU COMPLETED BY THE PROGRAM IS 0.80

LOSS DATA

LROPT	STRK	DLTKR	RTIGL	FRAIN	STIKS	RTIUK	STRIL	CHSTL	ALSMX	RTIAP
0.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.10	0.00	0.05

UNIT HYDROGRAPH DATA

TP= 0.79 CPE=0.63 NTA= C

DIRECTOR DATA

START= -2.1
 UNIT HYDROGRAPH 17 END-OF-PERIOD GRADIENTS, LAGE 1.15 HOURS, CP= 0.62 VOL= 1.00
 20. 34. 37. 21. 15. 7. 5.
 3. 2. 1. 1. 1. 1. 0.

END-OF-PERIOD FLOW
 NC.DA HR.MN PERIOD RAIN EXCS LOSS COMP Q
 SUM 21.81 19.42 2.39 4035.
 (554.)(453.)(61.)(114.26)

HYDROGRAPH ROUTING

ROUTE THRU RESERVOIR #2
 IECN ITAF JFLT JHRT INAME I-UTO
 0 0 0 0 1 0
 ROUTING DATA
 IRES ISAME IOFT IPMP LSTR
 1 1 0 0 0
 NSTPS NSTDL LAG AMSK X ISK STORA ISFRAT
 1 0 0 0.000 0.000 0.000 -601. 0
 CAPACITY= 0. 5. 11. 18. 24. 31. 37. 44.
 ELEVATION= 601. 601. 602. 602. 603. 603. 604. 604.

CREL SPWID CQW EXPW ELEV CQOL CAPEX EXPL
 600.6 17.0 2.6 1.5 0.0 0.0 0.0

DAM DATA
 TOPEL CQGD EXFD DAMVID
 603.6 2.6 1.5 1000.

PEAK OUTFLOW IS 36. AT TIME 42.00 HOURS
 PEAK OUTFLOW IS 70. AT TIME 41.75 HOURS
 PEAK OUTFLOW IS 87. AT TIME 41.50 HOURS
 PEAK OUTFLOW IS 121. AT TIME 41.50 HOURS
 PEAK OUTFLOW IS 157. AT TIME 41.50 HOURS

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
 FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
 AREA IN SQUARE MILES (SQUARE KILOMETERS)

LOCATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS				
				RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5
				0.30	0.50	0.60	0.80	1.00
HYDROGRAPH AT	10	0.08 (0.20)	1	78. (2.21)	130. (3.68)	156. (4.42)	208. (5.89)	260. (7.36)
ROUTED TO	10	0.08 (0.20)	1	38. (1.06)	76. (1.98)	87. (2.45)	121. (3.44)	157. (4.45)

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1	ELEVATION STORAGE OUTFLOW	INITIAL VALUE 699.67 0. 0.	SPILLWAY CREST 640.00 C. C.	TOP OF DAM 603.00 32. 234.
RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS
0.50	601.49	11.	38.	0.00
0.50	601.54	17.	79.	0.00
0.60	602.15	20.	87.	0.00
0.80	602.54	25.	121.	0.00
1.00	602.90	29.	157.	0.00
				TIME OF FAILURE HOURS
				42.00
				41.75
				41.50
				41.50
				41.50

APPENDIX D

REFERENCES

APPENDIX D

REFERENCES

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